

the present invention.

Figure 3A-3C depict a stream-up data access trend in accordance with an embodiment of the present invention.

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Figure 4A-4^CD depict an out-of-order stream-up data access trend in accordance with an embodiment of the present invention.

Figure 5A-5^DC depict a stream-down data access trend in accordance with an embodiment of the present invention.

Figures 6A-6C depict an out-of-order stream-down data access trend in accordance with an embodiment of the present invention.

Figure 7 is a block diagram of a computer system in accordance with an embodiment of the present invention.

Detailed Description

An embodiment of the present invention is directed to prefetching data into a cache, based on a history of data requests. The data prefetching is based on a trend, upward or downward, in the memory addresses of previously requested data. This prefetching is referred to as stream-up or stream-down, depending on the trend direction. An embodiment of the present invention uses a request history buffer (RHB) to store and detect trends in data requests. A prefetch cache is preferably used to store the prefetched data. The prefetch cache may be adapted for use in conjunction with other cache memories in the system.

Many memory hierarchies save recently requested data in a cache in order to take advantage of temporal locality in data requests. Also, many memory hierarchies retrieve blocks of contiguous data to take advantage of the spatial locality in data requests. However, neither of